

SEQUENCE LISTING

<110> Thomason, Arlen Liu, Benxian

<120> Fibroblast Growth Factor-Like Polypeptides

<130> 99,371

<140> 09/391,861

<141> 1999-09-07

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<170> PatentIn Ver. 2.0

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219 Ser Gly Leu Trp Val Ser Val Leu Ala Gly Leu Leu Gly Ala Cys 15

cag gca cac ccc atc cct gac tcc agt cct ctc ctg caa ttc ggg ggc 267 Gln Ala His Pro Ile Pro Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly 30

caa gtc cgg cag cgg tac ctc tac aca gat gat gcc cag cag aca gaa 315 Gln Val Arg Gln Arg Tyr Leu Tyr Thr Asp Asp Ala Gln Gln Thr Glu 50 45

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35	70	

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Glu Asp Gly Thr Val Gly Gly Ala Ala Asp Gln Ser Pro Glu Ser Leu 70

Leu Gln Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly Val

Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro Asp Gly Ala Leu Tyr Gly 100

Ser Leu His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu 120 115

Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro Leu

His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro Ala Pro Arg Gly 155 145

Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro Ala Pro Pro Glu 170

Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val Gly Ser Ser Asp

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cct gac tcc agc ccc ctc ctc cag ttt ggg ggt caa gtc cgg cag agg Pro Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly Gln Val Arg Gln Arg 45 40

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tac Tyr	ctc Leu 50	tac Tyr	aca Thr	gat Asp	gac Asp	gac Asp 55	Gln	gac Asp	Thr	gaa Glu	Ala 60	His	Leu	Glu	Ile	192
	gag Glu															240
ctc Leu	ctg Leu	gag Glu	ctc Leu	aaa Lys 85	gcc Ala	ttg Leu	aag Lys	cca Pro	90 GJA aaa	gtc Val	att Ile	caa Gln	atc Ile	ctg Leu 95	ggt Gly	288
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	tcg Ser															384
	gag Glu 130															432
	cgt Arg															480
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Pro Asp Ser Ser Pro Leu Leu Gln Phe Gly Gln Val Arg Gln Arg

Tyr Leu Tyr Thr Asp Asp Asp Gln Asp Thr Glu Ala His Leu Glu Ile

Arg Glu Asp Gly Thr Val Val Gly Ala Ala His Arg Ser Pro Glu Ser

Leu Leu Glu Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly

Val Lys Ala Ser Arg Phe Leu Cys Gln Gln Pro Asp Gly Ala Leu Tyr 105

Gly Ser Pro His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu 120

Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro 135 130

Leu Arg Leu Pro Gln Lys Asp Ser Pro Asn Gln Asp Ala Thr Ser Trp 155 150

Gly Pro Val Arg Phe Leu Pro Met Pro Gly Leu Leu His Glu Pro Gln 170 165

Asp Gln Ala Gly Phe Leu Pro Pro Glu Pro Pro Asp Val Gly Ser Ser 185

Asp Pro Leu Ser Met Val Glu Pro Leu Gln Gly Arg Ser Pro Ser Tyr 200

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<213> Homo sapiens

<400> 5

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Leu Glu Ile Arg Glu Asp Gly Thr Val Gly Gly Ala Ala Asp Gln Ser

Pro Glu Ser Leu Leu Gln Leu Lys Ala Leu Lys Pro Gly Val Ile Gln 50

Ile Leu Gly Val Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro Asp Gly 70

Ala Leu Tyr Gly Ser Leu His Phe Asp Pro Glu Ala Cys Ser Phe Arg 90 85

Glu Leu Leu Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His 105 100

Gly Leu Pro Leu His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro 120

Ala Pro Arg Gly Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro 135

Ala Pro Pro Glu Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val 150

Gly Ser Ser Asp Pro Leu Ser Met Val Gly Pro Ser Gln Gly Arg Ser 170 165

Pro Ser Tyr Ala Ser 180

<210> 6

<211> 181

<212> PRT

<213> Mus musculus

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Leu Glu Ile Arg Glu Asp Gly Thr Val Val Gly Ala Ala His Arg Ser

Pro Glu Ser Leu Leu Glu Leu Lys Ala Leu Lys Pro Gly Val Ile Gln

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Ala Leu Tyr Gly Ser Pro His Phe Asp Pro Glu Ala Cys Ser Phe Arg

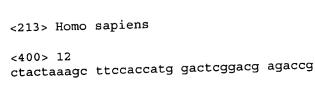
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Gly Leu Pro Leu Arg Leu Pro Gln Lys Asp Ser Pro Asn Gln Asp Ala 115

Thr Ser Trp Gly Pro Val Arg Phe Leu Pro Met Pro Gly Leu Leu His 135

Glu Pro Gln Asp Gln Ala Gly Phe Leu Pro Pro Glu Pro Pro Asp Val

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Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly 35

Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu
50 55 60

Ser Val Gly Glu Val Tyr Ile Lys Ser Thr Glu Thr Gly Gln Tyr Leu
65 70 75 80

Ala Met Asp Thr Asp Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu

Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr 100 105 110

Ile Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys 115 120 125

Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala 130 135 140

Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp 145 150 155

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Pro Ser Lys Asp Gly Arg Ser Leu Cys Glu Arg His Val Leu Gly Val

Phe Ser Lys Val Arg Phe Cys Ser Gly Arg Lys Arg Pro Val Arg Arg

Arg Pro Glu Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Phe Ser Gln

Gln Gly Tyr Phe Leu Gln Met His Pro Asp Gly Thr Ile Asp Gly Thr

Lys Asp Glu Asn Ser Asp Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly 105 100

Leu Arg Val Val Ala Ile Gln Gly Val Lys Ala Ser Leu Tyr Val Ala 115

Met Asn Gly Glu Gly Tyr Leu Tyr Ser Ser Asp Val Phe Thr Pro Glu 135

Cys Lys Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser

Ser Thr Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly 165

Leu Asn Lys Glu Gly Gln Ile Met Lys Gly Asn Arg Val Lys Lys Thr 190 185

Lys Pro Ser Ser His Phe Val Pro Lys Pro Ile Glu Val Cys Met Tyr 200 195

Arg Glu Pro Ser Leu His Glu Ile Gly Glu Lys Gln Gly Arg Ser Arg 220 215

Lys Ser Ser Gly Thr Pro Thr Met Asn Gly Gly Lys Val Val Asn Gln 235 230

Asp Ser Thr

<210> 16

<211> 247

<212> PRT

<213> Homo sapiens

<400> 16

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Pro Ser Lys Asn Arg Gly Leu Cys Asn Gly Asn Leu Val Asp Ile Phe

Ser Lys Val Arg Ile Phe Gly Leu Lys Lys Arg Arg Leu Arg Arg Gln

Asp Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Tyr Cys Arg Gln Gly

Tyr Tyr Leu Gln Met His Pro Asp Gly Ala Leu Asp Gly Thr Lys Asp

Asp Ser Thr Asn Ser Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg

Val Val Ala Ile Gln Gly Val Lys Thr Gly Leu Tyr Ile Ala Met Asn

Gly Glu Gly Tyr Leu Tyr Pro Ser Glu Leu Phe Thr Pro Glu Cys Lys 135

Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met 150

Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn 170

Lys Glu Gly Gln Ala Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro

Ala Ala His Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr Arg Glu 195

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Val Asn Lys Ser Lys Thr Thr 245

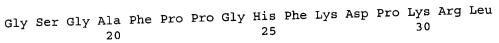
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<211> 155

<212> PRT

<213> Homo sapiens

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Val Asp Gly Val Arg Glu Lys Ser Asp Pro His Ile Lys Leu Gln Leu

Gln Ala Glu Glu Arg Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn

Arg Tyr Leu Ala Met Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys

Val Thr Asp Glu Cys Phe Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr

Asn Thr Tyr Arg Ser Arg Lys Tyr Thr Ser Trp Tyr Val Ala Leu Lys 120 115

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Ala Ile Leu Phe Leu Pro Met Ser Ala Lys Ser 150

<210> 18

<211> 239

<212> PRT

<213> Homo sapiens

<400> 18

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Pro Ala Ala Gly Pro Gly Ala Arg Leu Arg Arg Asp Ala Gly Gly Arg

Gly Gly Val Tyr Glu His Leu Gly Gly Ala Pro Arg Arg Lys Leu

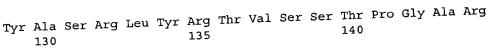
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Asn Gly Ser Leu Glu Asn Ser Ala Tyr Ser Ile Leu Glu Ile Thr Ala 65

Val Glu Val Gly Ile Val Ala Ile Arg Gly Leu Phe Ser Gly Arg Tyr

Leu Ala Met Asn Lys Arg Gly Arg Leu Tyr Ala Ser Glu His Tyr Ser 100

Ala Glu Cys Glu Phe Val Glu Arg Ile His Glu Leu Gly Tyr Asn Thr 120 115



Arg Gln Pro Ser Ala Glu Arg Leu Trp Tyr Val Ser Val Asn Gly Lys 150

Gly Arg Pro Arg Arg Gly Phe Lys Thr Arg Arg Thr Gln Lys Ser Ser

Leu Phe Leu Pro Arg Val Leu Asp His Arg Asp His Glu Met Val Arg 185 180

Gln Leu Gln Ser Gly Leu Pro Arg Pro Pro Gly Lys Gly Val Gln Pro 200

Arg Arg Arg Gln Lys Gln Ser Pro Asp Asn Leu Glu Pro Ser His 215 210

Val Gln Ala Ser Arg Leu Gly Ser Gln Leu Glu Ala Ser Ala His 230

<210> 19

<211> 206

<212> PRT

<213> Homo sapiens

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Leu Ala Leu Leu Ala Pro Trp Ala Gly Arg Gly Gly Ala Ala Pro

Thr Ala Pro Asn Gly Thr Leu Glu Ala Glu Leu Glu Arg Arg Trp Glu 40

Ser Leu Val Ala Leu Ser Leu Ala Arg Leu Pro Val Ala Ala Gln Pro 55

Lys Glu Ala Ala Val Gln Ser Gly Ala Gly Asp Tyr Leu Leu Gly Ile

Lys Arg Leu Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe His Leu

Gln Ala Leu Pro Asp Gly Arg Ile Gly Gly Ala His Ala Asp Thr Arg

Asp Ser Leu Leu Glu Leu Ser Pro Val Glu Arg Gly Val Val Ser Ile 120

Phe Gly Val Ala Ser Arg Phe Phe Val Ala Met Ser Ser Lys Gly Lys

Leu Tyr Gly Ser Pro Phe Phe Thr Asp Glu Cys Thr Phe Lys Glu Ile

12

Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Tyr Lys Tyr Pro Gly 170

Met Phe Ile Ala Leu Ser Lys Asn Gly Lys Thr Lys Lys Gly Asn Arg 180

Val Ser Pro Thr Met Lys Val Thr His Phe Leu Pro Arg Leu 200

<210> 20

<211> 268

<212> PRT

<213> Homo sapiens

<400> 20

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Ser Ala Trp Ala His Gly Glu Lys Arg Leu Ala Pro Lys Gly Gln Pro

Gly Pro Ala Ala Thr Asp Arg Asn Pro Ile Gly Ser Ser Ser Arg Gln

Ser Ser Ser Ser Ala Met Ser Ser Ser Ser Ala Ser Ser Pro Ala

Ala Ser Leu Gly Ser Gln Gly Ser Gly Leu Glu Gln Ser Ser Phe Gln

Trp Ser Pro Ser Gly Arg Arg Thr Gly Ser Leu Tyr Cys Arg Val Gly 85

Ile Gly Phe His Leu Gln Ile Tyr Pro Asp Gly Lys Val Asn Gly Ser 105

His Glu Ala Asn Met Leu Ser Val Leu Glu Ile Phe Ala Val Ser Gln 115

Gly Ile Val Gly Ile Arg Gly Val Phe Ser Asn Lys Phe Leu Ala Met

Ser Lys Lys Gly Lys Leu His Ala Ser Ala Lys Phe Thr Asp Asp Cys 150

Lys Phe Arg Glu Arg Phe Gln Glu Asn Ser Tyr Asn Thr Tyr Ala Ser 170 165

Ala Ile His Arg Thr Glu Lys Thr Gly Arg Glu Trp Tyr Val Ala Leu 185

Asn Lys Arg Gly Lys Ala Lys Arg Gly Cys Ser Pro Arg Val Lys Pro 200 195

Gln His Ile Ser Thr His Phe Leu Pro Arg Phe Lys Gln Ser Glu Gln 210 215 220

Pro Glu Leu Ser Phe Thr Val Thr Val Pro Glu Lys Lys Asn Pro Pro 225 230 235 240

Ser Pro Ile Lys Ser Lys Ile Pro Leu Ser Ala Pro Arg Lys Asn Thr 245 250 255

Asn Ser Val Lys Tyr Arg Leu Lys Phe Arg Phe Gly 260 265

<210> 21

<211> 208

<212> PRT

<213> Homo sapiens

<400> 21

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Gly Met Val Val Pro Ser Pro Ala Gly Thr Arg Ala Asn Asn Thr Leu
35 40 45

Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu Ser Arg Ser Arg Ala Gly 50 55 60

Leu Ala Gly Glu Ile Ala Gly Val Asn Trp Glu Ser Gly Tyr Leu Val

Gly Ile Lys Arg Gln Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe 85 90 95

His Leu Gln Val Leu Pro Asp Gly Arg Ile Ser Gly Thr His Glu Glu
100 105 110

Asn Pro Tyr Ser Leu Leu Glu Ile Ser Thr Val Glu Arg Gly Val Val 115 120 125

Ser Leu Phe Gly Val Arg Ser Ala Leu Phe Val Ala Met Asn Ser Lys 130 135 140

Gly Arg Leu Tyr Ala Thr Pro Ser Phe Gln Glu Glu Cys Lys Phe Arg 145 150 155 160

Glu Thr Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Asp Leu Tyr 165 170 175

Gln Gly Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys Arg Gly
180 185 190

Ser Lys Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro Arg Ile 195 200 205 <210> 22

<211> 194

<212> PRT

<213> Homo sapiens

<400> 22

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Asn Asp Met Thr Pro Glu Gln Met Ala Thr Asn Val Asn Cys Ser Ser

Pro Glu Arg His Thr Arg Ser Tyr Asp Tyr Met Glu Gly Gly Asp Ile

Arg Val Arg Arg Leu Phe Cys Arg Thr Gln Trp Tyr Leu Arg Ile Asp

Lys Arg Gly Lys Val Lys Gly Thr Gln Glu Met Lys Asn Asn Tyr Asn 85

Ile Met Glu Ile Arg Thr Val Ala Val Gly Ile Val Ala Ile Lys Gly

Val Glu Ser Glu Phe Tyr Leu Ala Met Asn Lys Glu Gly Lys Leu Tyr 120

Ala Lys Lys Glu Cys Asn Glu Asp Cys Asn Phe Lys Glu Leu Ile Leu 130

Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala Lys Trp Thr His Asn Gly

Gly Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Arg Gly 165

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<213> Homo sapiens

<400> 23

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Val Pro Phe Gly Asn Val Pro Val Leu Pro Val Asp Ser Pro Val Leu 20 25 30

Leu Ser Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly 35 40 45

Pro Ala Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg Arg 50 55 60

Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly 65 70 75 80

Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu 85 90 95

Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser 100 105 110

Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu 115 120 125

Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp 130 135 140

Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg 145 150 155 160

Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr 165 170 175

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<210> 24

<211> 155

<212> PRT

<213> Mus musculus

<400> 24

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Asn Leu Pro Leu Gly Asn Tyr Lys Lys Pro Lys Leu Leu Tyr Cys Ser 20 25 30

Asn Gly Gly His Phe Leu Arg Ile Leu Pro Asp Gly Thr Val Asp Gly
35 40 45

Thr Arg Asp Arg Ser Asp Gln His Ile Gln Leu Gln Leu Ser Ala Glu 50

Ser Ala Gly Glu Val Tyr Ile Lys Gly Thr Glu Thr Gly Gln Tyr Leu

Ala Met Asp Thr Glu Gly Leu Leu Tyr Gly Ser Gln Thr Pro Asn Glu

Glu Cys Leu Phe Leu Glu Arg Leu Glu Glu Asn His Tyr Asn Thr Tyr 105

Thr Ser Lys Lys His Ala Glu Lys Asn Trp Phe Val Gly Leu Lys Lys 120

Asn Gly Ser Cys Lys Arg Gly Pro Arg Thr His Tyr Gly Gln Lys Ala 135 130

Ile Leu Phe Leu Pro Leu Pro Val Ser Ser Asp

<210> 25

<211> 245

<212> PRT

<213> Mus musculus

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Arg Glu Arg Glu Lys Ser Asn Ala Cys Lys Cys Val Ser Ser Pro Ser

Lys Gly Lys Thr Ser Cys Asp Lys Asn Lys Leu Asn Val Phe Ser Arg

Val Lys Leu Phe Gly Ser Lys Lys Arg Arg Arg Arg Pro Glu Pro

Gln Leu Lys Gly Ile Val Thr Lys Leu Tyr Ser Arg Gln Gly Tyr His 70 65

Leu Gln Leu Gln Ala Asp Gly Thr Ile Asp Gly Thr Lys Asp Glu Asp

Ser Thr Tyr Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg Val Val 105 100

Ala Ile Gln Gly Val Gln Thr Lys Leu Tyr Leu Ala Met Asn Ser Glu 120

Gly Tyr Leu Tyr Thr Ser Glu His Phe Thr Pro Glu Cys Lys Phe Lys 135

Glu Ser Val Phe Glu Asn Tyr Tyr Val Thr Tyr Ser Ser Met Ile Tyr

Arg Gln Gln Ser Gly Arg Gly Trp Tyr Leu Gly Leu Asn Lys Glu 165

Gly Glu Ile Met Lys Gly Asn His Val Lys Lys Asn Lys Pro Ala Ala 185 180

His Phe Leu Pro Lys Pro Leu Lys Val Ala Met Tyr Lys Glu Pro Ser 200 195

Leu His Asp Leu Thr Glu Phe Ser Arg Ser Gly Ser Gly Thr Pro Thr 215

Lys Ser Arg Ser Val Ser Gly Val Leu Asn Gly Gly Lys Ser Met Ser 225

His Asn Glu Ser Thr

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<211> 247

<212> PRT

<213> Mus musculus

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Arg Glu Gln His Trp Asp Arg Pro Ser Ala Ser Arg Arg Arg Ser Ser

Pro Ser Lys Asn Arg Gly Leu Phe Asn Gly Asn Leu Val Asp Ile Phe

Ser Lys Val Arg Ile Phe Gly Leu Lys Lys Arg Arg Leu Arg Arg Gln 55

Asp Pro Gln Leu Lys Gly Ile Val Thr Arg Leu Tyr Cys Arg Gln Gly 65

Tyr Tyr Leu Gln Met His Pro Asp Gly Ala Leu Asp Gly Thr Lys Asp

Asp Ser Thr Asn Ser Thr Leu Phe Asn Leu Ile Pro Val Gly Leu Arg 100

Val Val Ala Ile Gln Gly Val Lys Thr Gly Leu Tyr Ile Ala Met Asn

Gly Glu Gly Tyr Leu Tyr Pro Ser Glu Leu Phe Thr Pro Glu Cys Lys 135

Phe Lys Glu Ser Val Phe Glu Asn Tyr Tyr Val Ile Tyr Ser Ser Met 150 145

Leu Tyr Arg Gln Gln Glu Ser Gly Arg Ala Trp Phe Leu Gly Leu Asn 165

Lys Glu Gly Gln Val Met Lys Gly Asn Arg Val Lys Lys Thr Lys Pro

Ala Ala His Phe Leu Pro Lys Pro Leu Glu Val Ala Met Tyr Arg Glu 200 195

Pro Ser Leu His Asp Val Gly Glu Thr Val Pro Lys Ala Gly Val Thr 215

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Val Asn Lys Cys Lys Thr Thr 245



<210> 27

<211> 154

<212> PRT

<213> Mus musculus

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Gly Ala Ala Phe Pro Pro Gly His Phe Lys Asp Pro Lys Arg Leu Tyr

Cys Lys Asn Gly Gly Phe Phe Leu Arg Ile His Pro Asp Gly Arg Val

Asp Gly Val Arg Glu Lys Ser Asp Pro His Val Lys Leu Gln Leu Gln

Ala Glu Glu Arg Gly Val Val Ser Ile Lys Gly Val Cys Ala Asn Arg 65

Tyr Leu Ala Met Lys Glu Asp Gly Arg Leu Leu Ala Ser Lys Cys Val

Thr Glu Glu Cys Phe Phe Phe Glu Arg Leu Glu Ser Asn Asn Tyr Asn 100

Thr Tyr Arg Ser Arg Lys Tyr Ser Ser Trp Tyr Val Ala Leu Lys Arg 120

Thr Gly Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln Lys Ala 135

Ile Leu Phe Leu Pro Met Ser Ala Lys Ser 150

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Met Gly Leu Ile Trp Leu Leu Leu Ser Leu Leu Glu Pro Ser Trp Pro Thr Thr Gly Pro Gly Thr Arg Leu Arg Arg Asp Ala Gly Gly Arg Gly Gly Val Tyr Glu His Leu Gly Gly Ala Pro Arg Arg Lys Leu Tyr Cys Ala Thr Lys Tyr His Leu Gln Leu His Pro Ser Gly Arg Val 55 Asn Gly Ser Leu Glu Asn Ser Ala Tyr Ser Ile Leu Glu Ile Thr Ala Val Glu Val Gly Val Val Ala Ile Lys Gly Leu Phe Ser Gly Arg Tyr Leu Ala Met Asn Lys Arg Gly Arg Leu Tyr Ala Ser Asp His Tyr Asn Ala Glu Cys Glu Phe Val Glu Arg Ile His Glu Leu Gly Tyr Asn Thr Tyr Ala Ser Arg Leu Tyr Arg Thr Gly Ser Ser Gly Pro Gly Ala Gln 135 130 Arg Gln Pro Gly Ala Gln Arg Pro Trp Tyr Val Ser Val Asn Gly Lys Gly Arg Pro Arg Arg Gly Phe Lys Thr Arg Arg Thr Gln Lys Ser Ser

Leu Leu Gln Ser Ser Gln Pro Arg Ala Pro Gly Glu Gly Ser Gln Pro 200 195

Leu Phe Leu Pro Arg Val Leu Gly His Lys Asp His Glu Met Val Arg 185

Arg Gln Arg Arg Gln Lys Lys Gln Ser Pro Gly Asp His Gly Lys Met 215

Glu Thr Leu Ser Thr Arg Ala Thr Pro Ser Thr Gln Leu His Thr Gly 235 230

Gly Leu Ala Val Ala 245

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Met Ala Lys Arg Gly Pro Thr Thr Gly Thr Leu Leu Pro Arg Val Leu

Leu Ala Leu Val Val Ala Leu Ala Asp Arg Gly Thr Ala Ala Pro Asn

Gly Thr Arg His Ala Glu Leu Gly His Gly Trp Asp Gly Leu Val Ala

Arg Ser Leu Ala Arg Leu Pro Val Ala Ala Gln Pro Pro Gln Ala Ala

Val Arg Ser Gly Ala Gly Asp Tyr Leu Leu Gly Leu Lys Arg Leu Arg

Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe His Leu Gln Val Leu Pro

Asp Gly Arg Ile Gly Gly Val His Ala Asp Thr Arg Asp Ser Leu Leu 100

Glu Leu Ser Pro Val Gln Arg Gly Val Val Ser Ile Phe Gly Val Ala 115

Ser Arg Phe Phe Val Ala Met Ser Ser Arg Gly Lys Leu Phe Gly Val 135

Pro Phe Phe Thr Asp Glu Cys Lys Phe Lys Glu Ile Leu Leu Pro Asn

Asn Tyr Asn Ala Tyr Glu Ala Tyr Ala Tyr Pro Gly Met Phe Met Ala 165

Leu Ser Lys Asn Gly Arg Thr Lys Lys Gly Asn Arg Val Ser Pro Thr

Met Lys Val Thr His Phe Leu Pro Arg Leu 200

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Ser Ala Trp Ala His Gly Glu Lys Arg Leu Thr Pro Glu Gly Gln Pro

Ala Pro Pro Arg Asn Pro Gly Asp Ser Ser Gly Ser Arg Gly Arg Ser

Ser Ala Thr Phe Ser Ser Ser Ser Ala Ser Ser Pro Val Ala Ala Ser 50 55 60

Pro Gly Ser Gln Gly Ser Gly Ser Glu His Ser Ser Phe Gln Trp Ser 65 70 75 80

Pro Ser Gly Arg Arg Thr Gly Ser Leu Tyr Cys Arg Val Gly Ile Gly 85 90 95

Phe His Leu Gln Ile Tyr Pro Asp Gly Lys Val Asn Gly Ser His Glu 100 105 110

Ala Ser Val Leu Ser Ile Leu Glu Ile Phe Ala Val Ser Gln Gly Ile 115 120 125

Val Gly Ile Arg Gly Val Phe Ser Asn Lys Phe Leu Ala Met Ser Lys 130 135 140

Lys Gly Lys Leu His Ala Ser Ala Lys Phe Thr Asp Asp Cys Lys Phe 145 150 155 160

Arg Glu Arg Phe Gln Glu Asn Ser Tyr Asn Thr Tyr Ala Ser Ala Ile 165 170 175

His Arg Thr Glu Lys Thr Gly Arg Glu Trp Tyr Val Ala Leu Asn Lys 180 185 190

Arg Gly Lys Ala Lys Arg Gly Cys Ser Pro Arg Val Lys Pro Gln His 195 200 205

Val Ser Thr His Phe Leu Pro Arg Phe Lys Gln Ser Glu Gln Pro Glu 210 215 220

Leu Ser Phe Thr Val Thr Val Pro Glu Lys Lys Lys Pro Pro Val Lys 225 230 235 240

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Tyr Arg Leu Lys Phe Arg Phe Gly

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<211> 208

<212> PRT

<213> Mus musculus

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Gly Met Val Val Pro Ser Pro Ala Gly Ala Arg Ala Asn Gly Thr Leu

40

Leu Asp Ser Arg Gly Trp Gly Thr Leu Leu Ser Arg Ser Arg Ala Gly 55

45

Leu Ala Gly Glu Ile Ser Gly Val Asn Trp Glu Ser Gly Tyr Leu Val 70

Gly Ile Lys Arg Gln Arg Arg Leu Tyr Cys Asn Val Gly Ile Gly Phe

His Leu Gln Val Pro Pro Asp Gly Arg Ile Ser Gly Thr His Glu Glu

Asn Pro Tyr Ser Leu Leu Glu Ile Ser Thr Val Glu Arg Gly Val Val 120 115

Ser Leu Phe Gly Val Lys Ser Ala Leu Phe Ile Ala Met Asn Ser Lys 135

Gly Arg Leu Tyr Thr Thr Pro Ser Phe His Asp Glu Cys Lys Phe Arg 145

Glu Thr Leu Leu Pro Asn Asn Tyr Asn Ala Tyr Glu Ser Asp Leu Tyr 170

Arg Gly Thr Tyr Ile Ala Leu Ser Lys Tyr Gly Arg Val Lys Arg Gly

Ser Lys Val Ser Pro Ile Met Thr Val Thr His Phe Leu Pro Arg Ile 200 195

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<213> Mus musculus

35

<400> 32

Met Arg Lys Trp Ile Leu Thr Arg Ile Leu Pro Thr Leu Leu Tyr Arg

Ser Cys Phe His Leu Val Cys Leu Val Gly Thr Ile Ser Leu Ala Cys

Asn Asp Met Ser Pro Glu Gln Thr Ala Thr Ser Val Asn Cys Ser Ser 40 35

Pro Glu Arg His Thr Arg Ser Tyr Asp Tyr Met Glu Gly Gly Asp Ile 55

Arg Val Arg Arg Leu Phe Cys Arg Thr Gln Trp Tyr Leu Arg Ile Asp

Lys Arg Gly Lys Val Lys Gly Thr Gln Glu Met Lys Asn Ser Tyr Asn 85

Ile Met Glu Ile Arg Thr Val Ala Val Gly Ile Val Ala Ile Lys Gly 105

Val Glu Ser Glu Tyr Tyr Leu Ala Met Asn Lys Glu Gly Lys Leu Tyr 120

Ala Lys Lys Glu Cys Asn Glu Asp Cys Asn Phe Lys Glu Leu Ile Leu

Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala Lys Trp Thr His Ser Gly 155 150

Gly Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Lys Gly 170 165

Lys Lys Thr Lys Lys Glu Gln Lys Thr Ala His Phe Leu Pro Met Ala 185

Ile Thr

<210> 33

<211> 208

<212> PRT

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<400> 33

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Leu Asn Asp His Leu Gly Gln Ser Glu Ala Gly Gly Leu Pro Arg Gly 35

Pro Ala Val Thr Asp Leu Asp His Leu Lys Gly Ile Leu Arg Arg

Gln Leu Tyr Cys Arg Thr Gly Phe His Leu Glu Ile Phe Pro Asn Gly

Thr Ile Gln Gly Thr Arg Lys Asp His Ser Arg Phe Gly Ile Leu Glu

Phe Ile Ser Ile Ala Val Gly Leu Val Ser Ile Arg Gly Val Asp Ser 105

Gly Leu Tyr Leu Gly Met Asn Glu Lys Gly Glu Leu Tyr Gly Ser Glu

Lys Leu Thr Gln Glu Cys Val Phe Arg Glu Gln Phe Glu Glu Asn Trp 140 135 130

Tyr Asn Thr Tyr Ser Ser Asn Leu Tyr Lys His Val Asp Thr Gly Arg Arg Tyr Tyr Val Ala Leu Asn Lys Asp Gly Thr Pro Arg Glu Gly Thr 170 Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val 185 180 Asp Pro Asp Lys Val Pro Glu Leu Tyr Lys Asp Ile Leu Ser Gln Ser 200 <210> 34 <211> 33 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Random primer with Not I restriction site for first strand cDNA synthesis <220> <221> misc_feature <222> (25)..(33) <223> "N" can be A, G, C, or T <400> 34 33 ggaaggaaaa aagcggccgc aacannnnnn nnn <210> 35 <211> 23 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Primer for first strand cDNA synthesis <400> 35 23 aatccgatgc ccacgttgca gta <210> 36 <211> 26 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: PCR primer for

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Leu Leu Leu Ala Val Phe Leu Leu Gly Val Tyr Gln Ala								
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Met Asp Ser Asp Glu Thr Gly Phe Glu His Ser Gly Leu Trp Val Ser								
10 15								



Val Leu Ala Gly Leu Leu Gly Ala Cys Gln Ala 20 25